

THE CONDUIT

WINTER 2020

THE OFFICIAL PUBLICATION OF THE VIRGINIA WATER ENVIRONMENT ASSOCIATION, INC.



The HISTORY of EARTH DAY

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- Students place in Model Water Tower Competition



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The History of Earth Day

In 1969, our Earth was seen from space for the first time as captured in the timeless photo taken from near the moon’s surface. That same year, the Cuyahoga River caught fire in Ohio. Rachel Carson wrote her thought-provoking environmental book, *Silent Spring*, only seven years prior.

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Get Involved in 2020



Laurissa Hoyle, President

2020 promises to be another great year for VWEA members and we are now 1,800 strong!

Kicking off in early February is one of our new events – WaterTOC: Technical Online Conference (pronounced WaterTALK). This new event has the purpose of bringing more training to various regions of our state through a simultaneous broadcast to three locations. We will have a water-focused and a wastewater-focused track, and provide up to four CPUs. We will be using one of the association's newest technology platforms, Zoom, which is a mixture of video conferencing and screen-share technologies.

It is sure to be a great event!

Award nominations

One key duty of the VWEA board and committees is to select individuals or organizations to recognize for their service or achievement in our industry. If a certain person or facility shines bright, please take the time to put forth an award nomination either to the associated committee, or to me directly. Your input is vital to ensuring

those deserving receive recognition. The various WEF and VWEA-specific award descriptions are available on our website at: www.vwea.org/pageAwardsCommittee?&hhsearchterms=%22awards%22.

Scholarships

Now is the time of year to think about college scholarships, and the VWEA awards four \$2,500 annual scholarships, and sends three individuals to the Wastewater Short School at Virginia Tech. We are also happy to report that our scholarship funds are growing and may be able to support additional scholarships in the near future.

Cutting-Edge Training Events

One of the things that makes WVEA unique is our technology and keeping our organization up to date in an electronic world. With the VWEA Widget, you can keep up with VWEA on your phone or home computer. We are also having a lot of fun implementing meetings and technical events through Zoom, as well as creating videos for our social media event promotions. I would encourage all committees to give it a try.

Upcoming Events for 2020 in Virginia

March 2-3 | Industrial Waste & Pretreatment Conference | Omni, Charlottesville

March 19 | Safety and Security Workshop: Are You Prepared? | Newport News

April 23 | VWEA Stormwater Seminar | Westin, Richmond

April 28 | NVRAC Golf Classic | 1757 Golf Club, Dulles

May 6 | Virginia Utility Management Conference | Westin, Richmond

May 7 | VWEA Education Seminar | Westin, Richmond

June 3 | CVRAC Scorcher Golf Tournament | Hunting Hawk, Glen Allen

June 24-25 | VWEA Operations Conference with Safety Seminar & Ops Challenge | Hotel Madison, Harrisonburg

July 27-28 | VA AWWA/VWEA Good Lab Practices Conference | Omni, Charlottesville

September 14-17 | WaterJAM 2020 | Hampton Roads Convention Center, Hampton

Committee Kudos

WaterJAM Abstract Reviewers – Thank you to all those within our membership that reviewed abstracts. This is how we maintain a technically strong conference every year.

Student Members – We have a record number of student members as we just crossed the 125 threshold.

Abstract Writing Workshop – Thanks to Gary Hart, HRSD and Noelle Slater, Arcadis for putting on this event. ☺



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VIRGINIA WATER ENVIRONMENT ASSOCIATION



We invite all our members to make the most of your membership by getting active in a committee. Our committees do a range of activities including:

- Planning the Joint Annual Meeting (WaterJAM)
- Planning and delivering educational seminars and workshops throughout the year
- Writing articles for the "The Conduit" and e-newsletter
- Volunteering for service projects that promote the enhancement of our water environment
- Promoting the growth of the industry by engaging youth of all ages
- And much more...

Review the list below and join a committee today!

Administrative Committees
<p>Communications: Solicits articles for and produces a quarterly magazine called "The Conduit". Committee also puts together the Annual VWEA Calendar and assists Association staff with social media, including evaluating data to improve engagement of members.</p> <p>Contact: Sara Ferrance, sferrance@carollo.com</p>
<p>Continuing Education: Meets the 3rd Wednesday of each month via conference call to review abstracts for VWEA education events to determine eligibility for CPEs.</p> <p>Contact: Terry Legg, tlegg@wrallp.com</p>
<p>Membership: Actively strives to improve membership and committee involvement of new and old members.</p> <p>Contact: Jewel Minor, jewel.minor@richmondgov.com</p>
<p>Strategic Planning: The committee works to ensure VWEA has an active long-range and strategic plan and to measure progress toward meeting the goals of the Association's plan.</p> <p>Contact: Dana Hargrove, dhargrove@hazenandsawyer.com</p>
Education/Training Committees
<p>Annual Meeting - WaterJAM: WaterJAM provides technical growth opportunities (including continuing education credits) covering the latest industrial trends as well as a variety of social and service endeavors for all attendees.</p> <p>Contact: Peter Baskette, PBaskette@BrwnCald.com or Bryce Carter, brycecarter@combs-associates.com</p>
<p>Collection Systems: Strives to improve the quality of the operations and maintenance of wastewater collection and interceptor systems by improving professionalism, providing training, and the exchange of information and ideas.</p> <p>Contact: Kyle Logue, klogue@brwncald.com</p>
<p>Education: Organizes a one-day annual seminar in May for the specific purpose of educating VWEA members and others on cutting edge topics in the wastewater field.</p> <p>Contact: David Parker, David.Parker@dcwater.com</p>
<p>Industrial Waste & Pretreatment: Members hold monthly conference calls to organize the Industrial Waste and Pretreatment Seminar and Annual Industrial Environmental Excellence Awards.</p> <p>Contact: Beau Dodge, wrdodge@arlingtonva.us</p>
<p>Lab Practices: Determines and addresses laboratory related concerns of the Association's membership, promotes professionalism in laboratory practices, and sponsors an annual seminar on laboratory methodologies and requirements as well as a workshop at WaterJAM.</p> <p>Contact: Mike Mueller, michael.mueller@fairfaxcounty.gov</p>
<p>Leadership Academy: Develops a year-long program on leadership topics including moral and ethical leadership, emotional intelligence, people skills, project management, and more.</p> <p>Contact: Michele Siminari, msiminari@fairfaxwater.org</p>
<p>Operations: Offers annual educational conference/event focused on Plant Operations, Maintenance, and other associated staff and develops regional plans to offer single day training events / activities.</p> <p>Contact: Jeff Coyne, jcoyne@hazenandsawyer.com</p>
<p>Safety & Security: Develops and assists in conducting a safety program which keeps Association members and the public informed of safety issues in the water sector.</p> <p>Contact: Deborah Harsh, HarshD@chesterfield.gov</p>

VIRGINIA WATER ENVIRONMENT ASSOCIATION

<p>Stormwater: Provides the VWEA membership with education about stormwater issues, regulations, and to serve as a forum for the exchange of knowledge and experience among stormwater professionals. Contact: Benjamin Custalow, bcustalow@greeley-hansen.com</p>
<p>Sustainable Utilities: Leads the growth and advancement of sustainable practices in the utilities industry through communication and educational opportunities amongst VWEA and VA AWWA members. Contact: Matthias Wittenberg, wittenbergm@cdmsmith.com</p>
<p>Utility Management: The committee's purpose is to improve water and wastewater utility management in Virginia. We offer education for all association members on topics relevant to utility management through activities such as workshops and Water JAM presentations. Contact: Paul Delphos, Paul.Delphos@aecom.com</p>
<p>Water Reuse: Collaborates on the regulatory, technological and financial aspects of the water reuse industry, track developments and helps educate the memberships of both VA AWWA and VWEA on the newest findings. Contact: Liz Sitter, elizabeth.sitter@ghd.com</p>
<p>Outreach Committees</p>
<p>Public & Government Affairs: The Committee is responsible for tracking and reporting Federal and State legislation that may impact the wastewater industry in Virginia. The committee writes and submits articles for the Conduit regarding policy, legislation, and other topics. The Committee coordinates the Government Affairs session at WaterJAM each year. Contact: James Grandstaff, gra@henrico.us</p>
<p>Scholarship: Awards scholarships for students at Virginia institutions studying civil or environmental engineering, physical or environmental sciences, or wastewater treatment plant courses in pursuit of an operator's license. Contact: Allison Lee, alee@hazenandsawyer.com</p>
<p>Student Activities: Enhances students' knowledge of the water environment and encourages student membership and participation in VWEA and VA AWWA activities. Contact: Shirley Luu Smith, SLSmith@hazenandsawyer.com</p>
<p>Water for People: Helps people in developing countries improve quality of life by supporting the development of locally sustainable drinking water resources, sanitation facilities, and hygiene education programs. Contact: Jamie Bondurant, jbondurant@hazenandsawyer.com</p>
<p>Water Reach: Its mission is to ensure safe drinking water and proper sanitation to communities throughout Virginia. Contact: Joseph Brown, jbrown@sercap.org</p>
<p>Work for Water: Enhances the visibility and image of a career in the water and wastewater industries. Contact: Steven Turner, sturner@gfnet.com</p>
<p>WARN: Provides a method whereby Virginia water and wastewater utilities that have sustained damages from natural or manmade events could obtain emergency assistance as necessary from other water and wastewater utilities. Contact: Kenneth "IKE" Eisenhart, Ike.Eisenhart@IronHart-Consulting.com</p>
<p>Special Interest Committees</p>
<p>Information Technology: Promotes the use and integration of information technology within the wastewater and water industries. Identifies technology needs of organizations and provides resources to assist with implementation. Contact: Josh Gelman, gelmanjl@cdmsmith.com</p>
<p>Manufacturers & Reps: Provides VWEA and VA AWWA the resources of manufacturer and representative members for training programs, planning and implementation of the exhibit programs at the Annual Meeting and seminars. Contact: Matt Harrison, harrison.m@sherwoodlogan.com</p>
<p>Operation Challenge: Plans the annual competition, giving Virginia's operational professionals an avenue to cultivate new skills, or hone current ones. Ensure teams have the tools they need to represent Virginia admirably at WEFTEC. Contact: Lee Heath, lheath@hrsd.com</p>
<p>Regional Activities: Fosters networking, education, environmental stewardship, and social activities for VWEA in various regions across the state. Contact: Northern VA: Will Schafer, Will.Schafer@kimley-horn.com, Central VA: Olivia Langford, olangford@brockenbrough.com, Eastern VA: Jennifer Klages, jklages@rkk.com Southwest: Sarita Moore, smoore@abingdon-va.gov</p>
<p>Young Professional: Works to encourage active participation of the younger members of VWEA and VA AWWA. Contact: Bruce Strickland, bruce.strickland@timmons.com</p>

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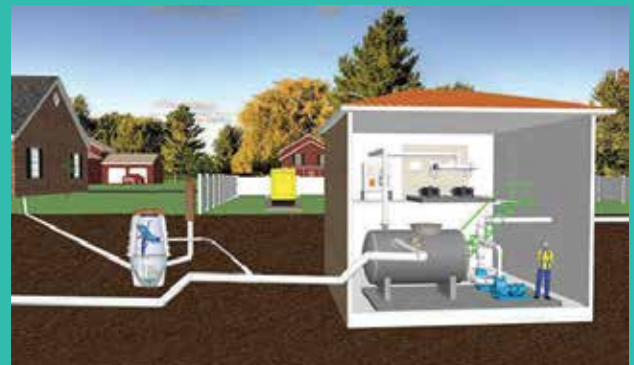


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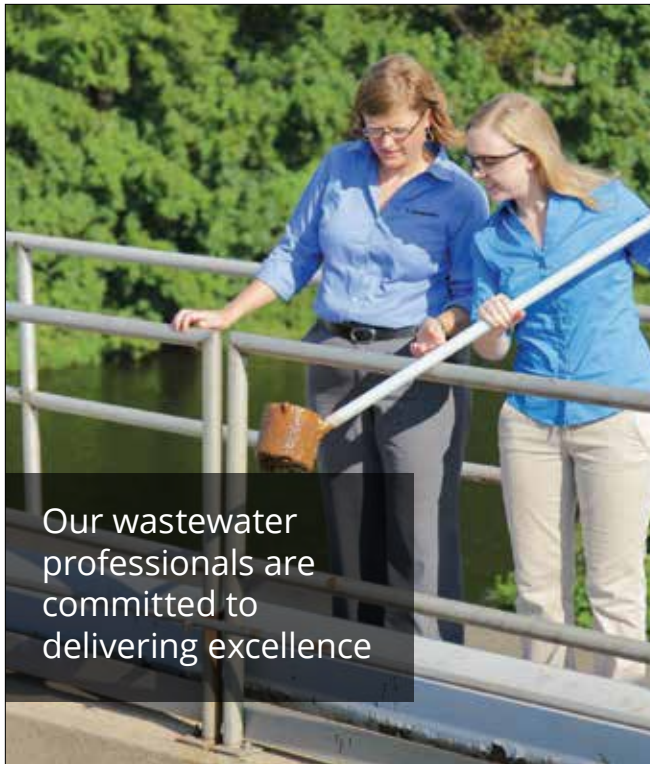
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The History of Earth Day...

celebrating 50 Years

By Christel Dyer, Chief of Treatment, HRSD for the Sustainable Utilities Committee




Photo taken from the moon's surface during the Apollo 11 moon landing in 1969. It is no surprise that the first Earth Day took place after this photo was taken. Photo courtesy of NASA.

In 1969, our Earth was seen from space for the first time as captured in the timeless photo taken from near the moon's surface. That same year, the Cuyahoga River caught fire in Ohio. Rachel Carson wrote her thought-provoking environmental book, *Silent Spring*, only seven years prior. Each of these events played a pivotal role in getting our nation's attention, and set the train in motion for the first ever Earth Day, which took place on April 22, 1970. On April 22, 2020, we will celebrate the 50th anniversary of Earth Day.

There was a lot going on in our country and in the world in 1970, but 20 million Americans still came together to protect their planet. According to the Earth Day Network (the global coordinator for Earth Day), the first Earth Day was founded by a U.S. Senator who worked closely with two Congressmen to coordinate planning the inaugural event. April 22 was selected as the date since it fell between spring break and final exams, and those in charge of planning knew that the country's youth were ready for change and would be big contributors to the event. The first Earth Day was primarily comprised of protests taking place throughout the country; protesting things such as oil spills, big

industry, loss of wilderness and wildlife, and the polluted air, land and water in general. The first Earth Day had such an impact that it further led to the creation of the United States Environmental Protection Agency and passage of the Clean Water, Clean Air, and Endangered Species acts. In 1990, Earth Day went global for the first time, with 141 countries participating. The Earth finally had the main stage! Progress to protect it continues to present day.

Our 4.54-billion-year-old Earth is ever changing. Humans have made a huge impact on the planet – most of which has not been positive. It is up to all of us to now make changes to stop the degradation of our planet. Be a part of that change by participating in the 50th anniversary celebration of Earth Day. Plan or get active in clean-up events, tree plantings, and outreach events. Get family and friends together to watch Earth-inspired movies and documentaries to learn more about our impact and how we can help reverse the damage we're doing to our precious home. Movies such as *The Lorax*, or documentaries like *The Human Element*, or *Chasing Ice*, are just a few options.

Spread the word and encourage everyone you know to join in the celebration! Share your events and photos with the Sustainable Utilities Committee by sending them to Christel Dyer at cdyer@hrsd.com. 



HRSD Boat Harbor Treatment Plant employees pose with the piles of trash that they removed from the small boat harbor adjacent to the treatment plant. Employees used their lunchbreak to pick up trash during Earth Day 2019, and further clean-up events are planned for Earth Day 2020.



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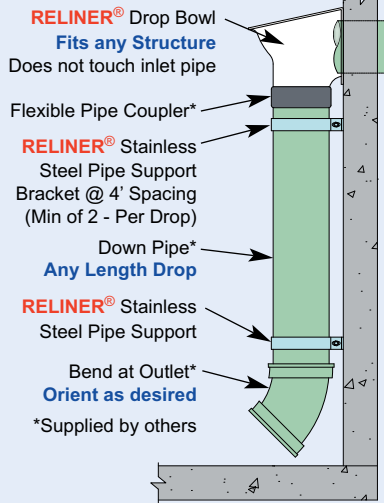
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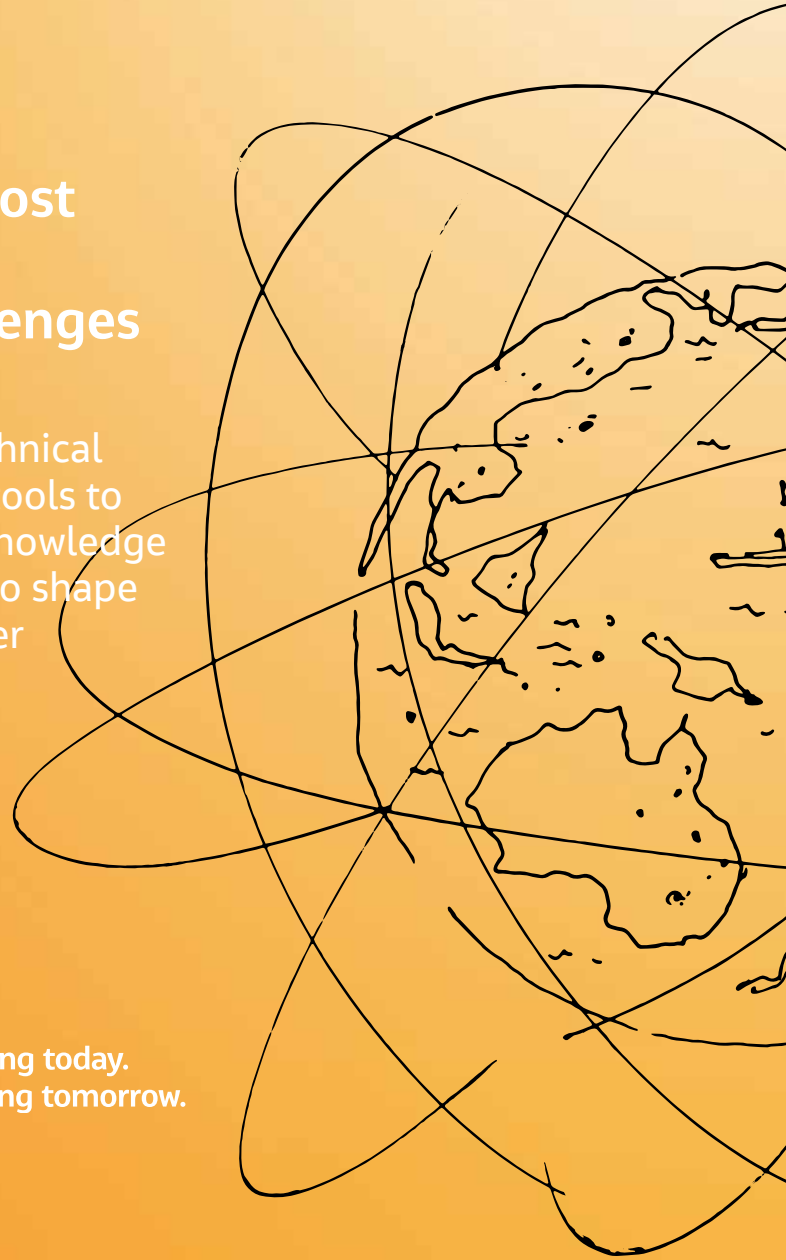


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BIG DATA draws a BIG CROWD

By Will Schafer, NVRAC Chair



A cross-section of the crowd in attendance at the Advanced Data Analytics event.

The Northern Virginia Regional Activities Committee (NVRAC) closed out a very successful year of events with a lunch-n-learn dedicated to the topic of Advanced Data Analytics. More than 40 professionals attended this popular event on October 30, 2019 at the Upper Occoquan Service Authority – Sellman Meeting Center.

Attendees were welcomed with a big Italian buffet and an opportunity to catch up and do some networking. After lunch, NVRAC Chair, Will Schafer, opened with some general announcements and some information on the many events that NVRAC is planning for 2020.

The technical portion of the event began with a presentation by Bob Krallinger (Stantec) entitled: Advanced Data Management for Energy and Operational Efficiency at Water, Wastewater and Water Reuse Facilities. Bob's presentation covered a comprehensive knowledge base for utilities on the resources available for energy data management obtained through a project funded by the Water Research Foundation and participation from approximately 30 water and wastewater utilities and software/equipment providers.

The presentation included the leading practices on data collection, data analysis, intelligent process control and display methods and highlighted the capabilities of commercial off-the-shelf and in-house data management solutions that are now available for the municipal sector in support of enhanced energy data management practices, improved energy efficiency and reduced cost. Several case histories were discussed to identify technological, analytical and computational advancements made in relation to management of energy data, and to



Will Schafer (committee chair), Aditya Ramamurthy (speaker), and Robert Krallinger (speaker).

the multitude of engineering systems available for meaningful data accessing, performance optimization, benchmarking and visualization.

The second presentation was delivered by Aditya Ramamurthy (Kennedy/Jenks) and was entitled: Data Lifecycle and Information Management: A Data-Driven Roadmap for Enterprise Decision Making. Aditya's presentation discussed utility management frameworks that have been implemented by utilities for effective integration, tracking and reporting of various data within their organization.

The presentation explored:

1. The Need – Efficient and Effective Enterprise Information Management;
2. The Opportunity – Centralized Data Lifecycle Process; and
3. The Outcome – Data Driven Decision Making. Current challenges and the ten

steps of the Data Lifecycle Approach were covered (Create, Collect, Connect, Cleanse, Compile, Classify, Control, Crunch, Communicate, and Check).

The presentation included a case study and discussion of the value generated by a regional utility through implementation of a data-centric asset management plan including a glimpse of the customized dashboard. In wrapping up, Aditya discussed the staffing and resource needs that utilities will require to become a data-driven organization where most all decisions are made based on available data rather than speculation.

A big thanks goes out to our speakers and to Bob Forgione (UOSA) and Kandi Mitchell (UOSA) for organizing and hosting this well-attended event. ☺

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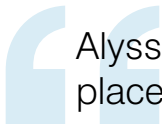


Aqualitec

Wastewater Treatment Equipment



STUDENTS PLACE IN MODEL WATER TOWER COMPETITION



Alyssa Casselle and Kylie Hayes, who submitted an entry based on candy, placed first, according to a release from the PWCSA.



Participants in the Model Tower Water Competition pose with their creations.



Winners Alyssa Casselle and Kylie Hayes

Two Woodbridge Middle School students have won the Prince William County Service Authority's (PWCSA) Model Water Tower Competition.

Held on Saturday, November 2, 2019 at the Prince William County Service Authority (PWCSA) in Woodbridge, VA, the annual event allows middle school students and fifth-graders in the Students Involved in Gifted Needs in Education Today (SIGNET) program to build model water towers. Those who placed received cash prizes.

Alyssa Casselle and Kylie Hayes, who submitted an entry based on candy, placed first, according to a release from the PWCSA.

"We were enjoying lollipops one day, and we thought, 'Why don't we do that for the competition?'" said Alyssa.

They also won third place at last year's Model Water Tower Competition (<http://whatsupwoodbridge.com/model-water-tower-competition-skills/>).

Nachiketa and Saanvi Mahajan of Pennington Traditional School in Manassas won



Jeremiah and Jerry Boasmanboon

second place, while Benton Middle School student Matthew Duffett was the third-place winner. Jeremiah and Jerry Boasmanboon from Triangle-based St. Francis of Assisi School received an honorable mention, while most Innovative Design was awarded to Gabrielle Johnson of Benton Middle School and Matthew Johnson from Ashland Elementary School in Manassas.

Courtesy of the [What's Up Prince William website](http://whatsupwoodbridge.com).



Third-place winner Matthew Duffett



Gabrielle and Matthew Johnson

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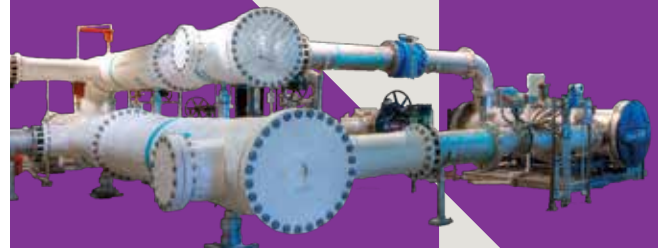
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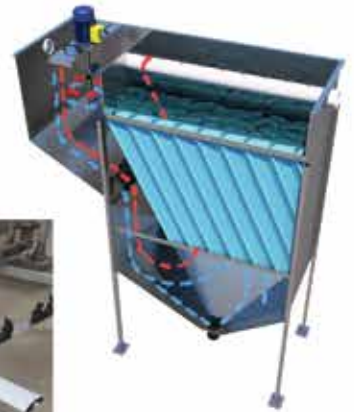
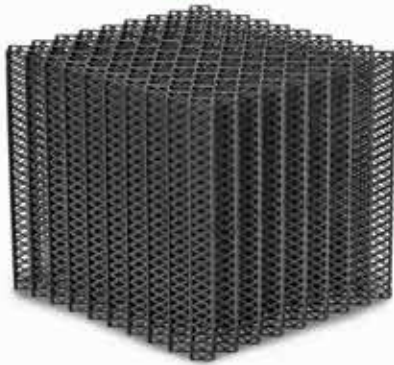
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36th ANNUAL INDUSTRIAL WASTE & PRETREATMENT CONFERENCE

In the world of Industrial Waste and Pretreatment, it seems as if there is always *Something Around Every Corner*, which happens to be the theme for the 2020 March 2 to 3 Conference at the Omni Hotel in Charlottesville. It's not too late to sign up to attend! Get the detailed brochure, and registration information online at the VWEA website, www.vwea.org.

Need professional contact hours? We have applied for 8.25 hours. Come for the contact hours. Come for the industry-knowledgeable exhibitors. Come for the career-enhancing networking opportunities. Come for the important regulatory updates. Or just come for the amazing and timely industry-specific topics, which will include PCB pollution minimization plans, industrial and dental inspections, hazardous waste pharmaceuticals, 'smart'



sewer sensor technology, AFFF and PFAS, metal finishing categorical applications, and a case study on the restorative improvements for a wastewater pretreatment facility.

If you would like to get involved with the Industrial Waste & Pretreatment Committee, please contact Beau Dodge at (703) 228-6881, or e-mail at wrdodge@arlingtonva.us.

A dark blue graphic with large, stylized numbers '06.03.20' in the background. The text reads: CENTRAL VIRGINIA REGIONAL ACTIVITIES COMMITTEE, 7TH ANNUAL SCORCHER GOLF TOURNAMENT, SAVE THE DATE, HUNTING HAWK GOLF CLUB. The text is white and green, and there are two horizontal lines above and below the date.

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StormwaterSeminar2020](https://www.vwea.org/event/StormwaterSeminar2020).

SCADA:

THE TREATMENT PLANT'S MOST UNDERUTILIZED SYSTEM

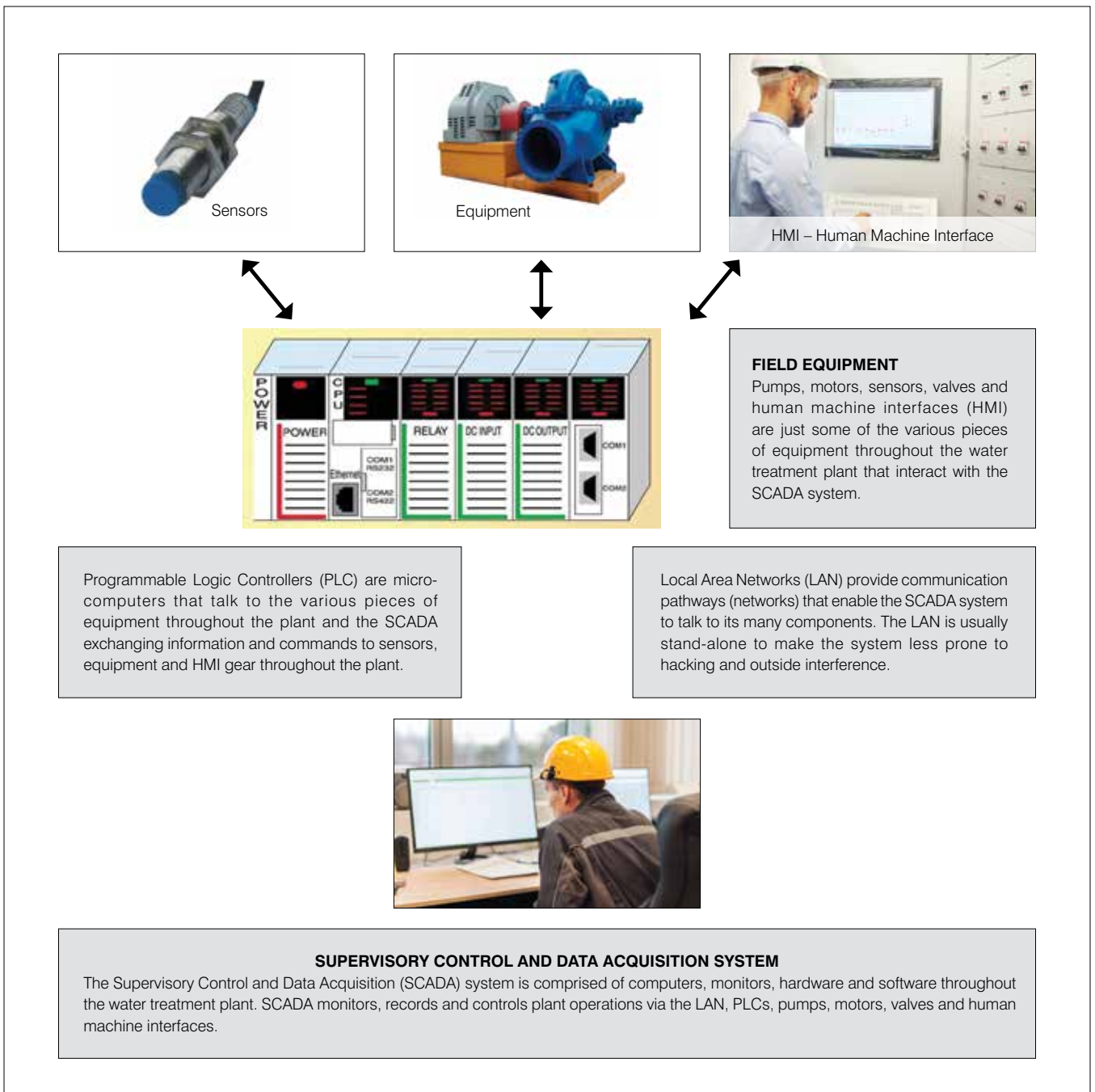
The Supervisory Control and Data Acquisition system, known to most operators simply as SCADA, is the heart and soul of any modern water or wastewater treatment plant.

SCADA is the most powerful tool at an operator's disposal. Unfortunately, the true power of this elusive creature is usually underutilized and often presents itself as a mystery. Because of its incredible utility, SCADA systems warrant thorough investigation and understanding.

"An operator that has a firm grasp of the SCADA is armed with an extremely powerful asset that places an incredible amount of useful data at your fingertips—instantly. The SCADA is your friend. Get to know it."

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Let's investigate the SCADA's basic components, usefulness, and capabilities. It should become apparent why operators need to have intimate knowledge and a thorough understanding of this priceless tool.



Basic SCADA Diagram¹

BASIC COMPONENTS

Most SCADA systems are comprised of some or all the following:

- **Hardware** – The computers, keyboards, printers and monitors used to display graphics, execute commands, print reports and provide access to real time data.
- **Software** – Made up of SCADA’s operating system and other programs that contain the instructions needed to efficiently run plant operations. Most operating systems are windows-based, but not necessarily.

There is also a growing trend for plants to employ cloud-based systems. Cloud technology helps utilities meet increasing storage demands and addresses ever growing concerns for security.

- **Programmable Logic Controllers (PLC)** – PLCs are distributed throughout the plant. These micro-computers interface with various equipment and human machine interfaces (HMIs). PLCs in turn, talk to SCADA software so an operator can execute equipment commands, make flow changes, etc.

- **Local Area Network (LAN)** – Typically SCADA is stand alone and runs on its own local network, separate from the internet. It’s usually set apart from the network that a municipality or company may use for other purposes such as: email and organizational websites. Keep your eyes open, the use of Virtual Private Networks is beginning to show up at more and more facilities. Especially in conjunction with previously planned upgrades and plant modifications.

SCADA: THE TREATMENT PLANTS MOST UNDERUTILIZED SYSTEM

SCADA CAPABILITIES

- **Display/Visual** – The SCADA display is its most readily recognizable and appreciated capability. Computer monitors and or big screen TV monitors are used to display real time operational data.
- **Logical Structure** – The display is logically arranged to help the Operator better assess plant status and quickly capture information. Most SCADA systems are set up using pages to organize and present systems using graphic images.
- **Command and Control** – Via SCADA, an operator can control equipment starts and stops. Chemical dosage can be adjusted, filter backwashes initiated, speed corrections and flow changes can all be accomplished with a mouse click or data input. This ability is priceless considering some equipment may be miles away from the Control Room.
- **Fault Identification** – Many pieces of field equipment such as pumps and motors can communicate faults to SCADA and

immediately notify the operator that the equipment has malfunctioned or failed.

- **Alarm Logging** – Operators receive various alarms such as high levels, high temperatures, equipment shutdowns, etc. Many systems also have graduated alarms levels. For instance, a level one alarm might require immediate or a specific action whereas a level two alarm may only indicate a warning. These alarm functions usually record the time and date of occurrence, as well as when the alarm was acknowledged.
- **Historian and Data Storage** – Think of the historian as a large storage facility for select plant parameters, filter turbidities, chlorine residuals, and the like. This data is not only useful, but much of it is required by state and federal regulations to be stored and accessible. SCADA systems are designed to capture and store this data. This characteristic is immensely helpful in consolidating information for various reports. For example, the mandated monthly report required by most State Health Departments.
- **Trending** – The ability to trend data is so powerful that it gets its own section.

TRENDING

Make no mistake, trend analysis is SCADA systems most underutilized function, despite it being arguably the most powerful. Unfortunately, it's also one of the most misunderstood.

For the purposes of this discussion a 'trend' is the continuous collection of data, that can be represented in various formats. However, trends are typically displayed in graphical form.

If we want to examine the trend for finished water total chlorine, it can be illustrated with a graph for a specified timeframe. The graph shows the exact time and date in which they were recorded. Multiple data parameters can be trended and displayed simultaneously. SCADA can effectively trend hundreds of plant parameters simultaneously.

This function also helps to anticipate equipment failures. The ability to see changes in normal operations gives you valuable insight into what is going on with a piece of equipment. For instance, trending indicates that the forward bearing temperature in a high service pump has been increasing gradually for some time and is routinely operating near alarm levels. This would be indicative of future bearing failure.

I've set up standard trend templates, that are reviewed each morning and throughout



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SCADA: THE TREATMENT PLANTS MOST UNDERUTILIZED SYSTEM

the course of the day. These templates give a quick snapshot of the most critical plant parameters. When it comes to analysis, SCADA trends are invaluable.

SCADA UTILITY

SCADA system's usefulness can be taken for granted. We should occasionally take stock of its many benefits and capabilities. It puts control of equipment at your fingertips. With the click of a mouse you can move millions of gallons of water, transfer water from massive storage tanks, or increase disinfection.

SCADA system's monitors provide a visual representation of your entire treatment plant and the distribution system. Specific screens are incorporated to monitor and control chemical feeds, flows, pressures, tank levels, turbidities, pH, monochloramine, free and total chlorine, ammonia residuals and a host of other plant parameters.

We haven't even talked about the automated features such as automatic flow regulation, maintaining system pressures, the filling of elevated tanks or filter backwashes. If you have ever had to backwash a filter manually and I don't mean by putting the controls in from SCADA, I mean manually. Where you must walk, climb, and or crawl under obstacles to manipulate each valve, start, regulate, and stop pumps by hand. Manually time and calculate the flow of your backwash. You know – real manual.

Now imagine running every aspect of the treatment plant in this manner. Surely you can begin to appreciate the power of your SCADA system.

TROUBLESHOOTING

This aspect of SCADA is another valuable tool that is often overlooked. When properly applied, SCADA is a formidable weapon for troubleshooting. It can help you pinpoint exact points of failure and specific causes. SCADA can provide more information about the casualty, which is always helpful when troubleshooting a problem.

THE VALUE OF UNDERSTANDING THE SCADA SYSTEM

A wise operator once said: "SCADA is your friend; get to know it." There are a multitude of reasons for an operator to learn and master the many uses of the SCADA. The main reason being, it makes you a better operator:

- SCADA provides time saving automation
- Gives a complete graphic overview of the plant
- Trending and alarm logging capability

- Real-time data at touch of a fingertip
- Remote monitoring and control of equipment
- It allows you to track seasonal changes
- Provide data storage and historical logging functions

SCADA capabilities are such that, I can come into the control room, review the SCADA data and tell you not only everything that occurred on the shift, but with about 90% accuracy – I can tell you which operator was running the plant. Now how powerful is that?

REFERENCE

- 1 V. A. Brooks. Super Operator – Practical Water Treatment Plant Operations and Training, Chemical Publishing ©2018.

Randall V. A. Brooks is the Assistant Water Production Manager for the City of Suffolk. He oversees Operations, Solids Handling and Distribution. He can be reached at rbrooks@suffolkva.us.

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2020 WEF AND VWEA PUBLIC OFFICIAL AWARD

The Public and Government Affairs Committee (PGAC) is now taking nominations for VWEA's 2020 Public Officials Award. The Public Officials Award is presented to an elected or appointed public official that has made a documented, significant contribution in the areas of clean water legislation, public policy, government service, or another area of public prominence that resulted in improvements to the water environment.

The award can be presented for public service at the local, state or federal level. The PGAC evaluates the nominations and makes a recommendation to the VWEA Board for approval. If approved, the Public Official Award is presented at the VA AWWA/VWEA Water JAM. Winners of the VWEA Public Officials Award will be announced at WaterJAM 2020 and will be nominated for the WEF Public Officials Award.

If there is a person you believe should be considered for this award, please contact James Grandstaff, Chair of the Public and Government Affairs Committee at (804) 501-7689 or at gra@henrico.us. A one-page biography of the nominee, a listing of the specific reasons for the nomination (two pages maximum) that relates to his/her work in improving the water environment and any other supporting material that relates to the award criteria are required for each nomination.

Nominations must be received by March 15, 2020.



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2020 VWEA AL H. PAESSLER ENVIRONMENTAL STEWARDSHIP AWARD

The Public and Government Affairs Committee (PGAC) is now taking nominations for VWEA's 2020 Al H. Paessler Environmental Stewardship Award.

Al Paessler was one of the initial employees of the State Water Control Board, which was formed in 1947. He served as Executive Secretary from 1949 to 1972 and was the longest-serving Executive Secretary of one of the precursor agencies to VDEQ. He was President of the Virginia Water Pollution Control Association (now the Virginia Water Environment Association) from 1959 to 1960.

By naming this award after Mr. Paessler, the award emphasizes government employee service to the water environment field and to the Association. The PGAC evaluates the nominations and makes a recommendation to the VWEA Board for approval. If approved, the Al H. Paessler Environmental Stewardship Award will be presented at WaterJAM 2020.

If there is a person you believe should be considered for this award, please contact James Grandstaff, Chair of the Public and Government Affairs Committee at (804) 501-7689 or at gra@henrico.us. A one-page biography of the nominee, a listing of the specific reasons for the nomination (two pages maximum) that relates to his/her work in improving the water environment and any other supporting material that relates to the award criteria are required for each nomination.

Nominations must be received by March 15, 2020.

THE VWEA FACILITY SAFETY AWARDS

First Place Award: The WEF George W. Burke Facility Safety Award

Second Place Award: The VWEA Facility Safety Award

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Completed application sent to the Wayne Sirna, wsirna@dewberry.com by May 1, 2020. For application and complete details go to our website at <https://www.vwea.org/page/Awards>

2020 VWEA SCHOLARSHIPS APPLICATIONS ARE NOW AVAILABLE

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Students enrolled at Virginia universities in a civil or environmental engineering or physical/environmental science undergraduate program. \$2,500 award.

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science undergraduate program. \$2,500 award.

SONNY RODEN MEMORIAL GRADUATE STUDENT SCHOLARSHIP

Students enrolled at Virginia universities in civil or environmental engineering or science graduate program. \$2,500 award.

OPERATORS SCHOLARSHIP

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EDUCATION AND/OR EXPERIENCE: High School diploma or equivalent, Associate Degree in related field preferred. (3) years' experience in the maintenance of water/wastewater equipment and instrumentation. Any equivalent combination of experience and/or education. Successful candidate will be required to pass a pre-employment background, drug and work screen.

CERTIFICATES, LICENSES, REGISTRATIONS: Possession of a valid and appropriate driver's license. Possession of Virginia Master Electrician license.

SALARY: Depends on Qualifications



By Mark Patrick McGuire and Katie Foreman

States and EPA Coordinating on Best Approaches to Nutrients Permitting

ACWA, WEF along with EPA Host Four Workshops on Nutrient Permitting

For the past two years, the Association of Clean Water Administrators (ACWA; Washington, D.C.) and the Water Environment Federation (WEF; Alexandria, Va.) have been working closely with the U.S. Environmental Protection Agency (EPA) to meet and discuss a broad range of nutrients permitting issues. Beginning in December 2017, a diverse group of representatives from state clean water programs involved in managing nutrient pollution and EPA headquarters and regional staff have been tackling this topic. These meetings will continue through 2021 as part of a cooperative agreement with EPA.

To date, ACWA, with support from WEF and EPA, have hosted four workshops with an additional three set for 2020 and 2021. The workshops' purpose is to help achieve several environmental outcomes by bringing together state, tribal, territorial, federal, and other stakeholders to identify challenges and barriers to nutrient permitting program implementation, highlight opportunities for program improvement and enhancement,

showcase innovations and achievements, and identify and attempt to solve the most intractable issues.

Workshop Topics

The first workshop, held in Boise, Idaho in December 2017, was a broad overview of topics regarding nutrients permitting. More than 50 individuals from the states and EPA participated, with presentations given on technologies, permitting flexibilities and innovations, the interrelation of permitting for nutrients and other pollutants, and other issues. A group of attendees also visited the Dixie Drain project in Parma, Idaho.

The second workshop, held in Columbus, Ohio, in June 2018, focused on the relationship between wastewater technologies and nutrient permitting. More than 40 individuals from the states and EPA participated, with presentations given on specific types of technology, optimization and alternative approaches to nutrients removal, costs analyses, operator training, small systems, and more. Also, attendees visited two facilities

in the greater Columbus area to learn about treatment processes and technologies.

The third workshop, held in Gulfport, Mississippi, in November 2018, focused on the connection between nutrient permitting and total maximum daily loads (TMDLs). More than 60 individuals from the states and EPA participated, with presentations and discussions focusing on breaking down barriers between TMDL and permitting programs, confined animal feeding operations (CAFOs) and municipal separate storm sewer systems (MS4s), reassessing and reevaluating TMDLs, politics and public perceptions of TMDLs and permits, small systems, variances and compliance schedules, and water quality trading.

The fourth and most recent workshop, held in Alexandria, Va., in November 2019, focused on identifying challenges and building solutions regarding water quality standards and permitting for nutrients. More than 70 individuals from the states and EPA participated, with presentations and discussions focusing on numeric and narrative nutrient criteria, the interaction between technology limits and

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water quality standards when permitting for nutrients, small systems, and staff coordination. A group of attendees also toured the Alexandria Renew Enterprises facility to learn about innovative treatment processes and technologies.

Each of the four meetings was live-streamed for individuals who could not attend in person.

Workshop Themes

Through the four workshops some themes have emerged, such as the need for permitting

flexibilities, improving communication, working with nutrients criteria, and dealing with small systems criteria.

Regarding permitting flexibilities, state representatives have shared their experiences using watershed-based permits (such as North Carolina and Virginia), water quality trading (such as Connecticut), and integrated planning (such as Ohio). States see permitting flexibilities as a suite of tools to help reduce nutrient pollution state waters in a more efficient and cost-effective manner.

Communication between state programs

and between states and the federal government has been a constant theme. Attendees have expressed that to be successful state permit writers need to have open communication with modelers, TMDL writers, standards and criteria developers, EPA headquarters and regional staff, and outside stakeholders. Breakdowns in communication are one of the main impediments to progress on nutrient pollution reduction.

States such as Missouri and Montana have developed and implemented numeric nutrient criteria. Other states, such as Iowa and Kansas, have narrative nutrient criteria. Both forms of criteria create challenges and opportunities when writing permits for nutrients. State representatives have discussed these challenges in each workshop, working toward solutions to challenges and sharing expertise.

Lastly, the issue of small systems management has been discussed in each workshop. Representatives from EPA Region 7, Kansas, and Indiana have presented together in each workshop on the challenges faced by small systems in communities smaller than 3,000 residents. Challenges include dwindling resources and populations, lack of operator expertise, need for system upgrades, and potential tightening of permit limits. Potential solutions included long-term nutrient reduction plans, regionalization, general permitting, variances, and more.

These four themes are just a few examples of the themes covered in the workshop series.

Future Meetings

ACWA and WEF plan to continue offering interesting and important topics and discussions at the next three nutrients permitting workshops. These workshops provide states and EPA, as coregulators, the opportunity to identify and seek solutions for the diverse challenges associated with nutrient pollution.

In 2020, there will be two workshops, in summer and autumn, with the final workshop of the cooperative agreement to be held in 2021. ACWA and WEF hope to continue to work toward solutions to one of the nation's greatest environmental challenges.

*Both authors are from the Association of Clean Water Administrators (Washington, D.C.), the independent, nonpartisan, national organization of state, interstate, and territorial water program managers, who on a daily basis implement the water quality programs of the Clean Water Act. **Mark Patrick McGuire** is an Environmental Program Manager and **Katie Foreman** is an Environmental Program Associate at ACWA. ☺*



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Seven Entries Earn Awards in the 2019 Operator Ingenuity Contest

Every year at WEFTEC, the Operator Ingenuity Contest awards operators who find simple, applicable solutions to everyday problems. WEFTEC® 2019 hosted the eighth annual Operator Ingenuity Contest awards ceremony on September 25. In 2019, seven new winners joined the ranks of the nearly 50 other fixes that made people's jobs easier and safer.

The Muckraker Award

This award went to Mike Wenner of the City of Napoleon (Ohio) for creating a tool to help solids dry more quickly. Wenner fabricated a large rake from a piece of steel angle and welded to it several portions of cut pipe. The rake gets attached to a front-end loader. The loader can now be used to rake the solids in the drying bed, increasing its surface area and drying it much faster than was previously possible.

The Goody Bag Award

William Paddock of the South Orange County Wastewater Authority (Dana Point, Calif.) received this award for his invention of a fisheye filtration system. After discovering fisheyes (globules of polymer) were blocking his facility's polymer flow switch and ball checks and triggering multiple 'low polymer flow' alarms daily, Paddock knew something had to be done. Paddock and his staff decided to create a filter using an old chemical tote. They cut a hole in the tote and fashioned a filter from screen door material. It worked, but the process was labor intensive because they had to frequently clean the filter to maintain flow. After a few iterations, they landed on using a replaceable 600-micron bag filter that it could be replaced easily when full. They also installed a removable filtration platform that could be placed on top of any tote, and a pneumatic double diaphragm pump, which enables them to place the filtration system above the tank. Paddock credits his success to communication with staff: "I went to every single operator and

asked 'what would make this better?' We got some really good ideas."

The Tight Squeegee Award

This award went to Charlotte Water's (Charlotte, N.C.) Johanna McHone for inventing a device to peel polymer slime off the polymer age tanks at her facility. Before her invention, she had to use a heated pressure washer to clean the tank sides. This had the risk of splashing scalding hot water or chemicals on the operator. It also consumed a lot of diesel, electricity, and water. Her fix was incredibly simple: She fixed a squeegee to a flexible broom handle. The tool just peels the slime off the tank wall.

The Sewer Sailor Award

This award went to James E. Segrest Jr. from the City of Auburn Water Resource Management Sewer Department (Auburn, Ala.). Segrest had a wide diameter sewer main that

had to be inspected. The flow in the main was too great for the facility's crawler camera to be feasible. So, instead of sending a human in, Segrest attached a GoPro camera and flashlights to a cooler lid and floated it through the main. He attached the float to a reel of kite string to control its progress. The facility has used the sewer sailor several times.

The Bottle Bump Award

Perhaps the simplest and cleverest of all, this award went to James Petalio of the Rodeo Sanitary District (Rodeo, Calif.) who was dealing with constant chlorine dosing alarms after hours. The alarms triggered the facility's sodium bisulfite metering pump to run at 100% automatically to prevent a chlorine violation. The problem was solved by simply raising reagent bottles (acetate and potassium iodide buffer solution) from below the analyzer unit to above it. Removing the need for the reagent dosing pump to overcome the head of lifting it




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up to the analyzer stabilized the process and eliminated the alarms. This straightforward fix saved the district \$1,200 in overtime costs and more than \$12,800 per year in sodium bisulfite costs.

The Smooth Move Award

This award went to John Presta and George Pelzowski of the Corbett Creek Water Pollution Control Plant (Whitby, Ontario) who were dealing with jammed, manual, aluminum, channel sluice gates. The aluminum gates had fused to the aluminum channels. Staff often were resorting to cutting out the gate to resolve the problem.

To address this issue, the Corbett Creek team ordered new gates from various suppliers. Their clever twist came in how to install them: They welded side slide tabs to the new gates that let them fit in the original channels perfectly. They also added a rubber stop at the bottom of the gate to help the seal.

The Rag Spear Award

Matt Haggler from the City of Meridian (Idaho) received this award for skewering an irritating problem. The city's three-million-L (800,000-gal) anaerobic digesters hadn't been cleaned in several years and the influent screens weren't working well. This meant wipes, rags, and hair had built up in the tank. The bound-up material had created massive rag flotillas, which soon began to affect digester performance.

Haggler's solution was a 7.6m-long (25-ft-long) long, 50-mm-thick (2-in.-thick) solid steel spear head with collapsible tines. The spear can be attached to a crane and forced into the rag balls. Once stabbed in, the crane pulls the spear back out and the tines unfold. The tines hook into the rag ball like barbs, and the mass of material can be pulled out. The spear has removed rag balls weighing nearly 450 kg (1,000 lbs.). The spear cost less than a few hundred dollars and has saved the city significant money in down time, and enabled the digesters to work properly.

Apply now for Operator Ingenuity 2020

Next year's contestants will certainly have big shoes to fill, but if past years are any indication, the idea will only get more creative and ingenious. If you have a simple fix that has made your job safer, easier, or more efficient, submit it for the 2020 contest.

The application period is open now and closes June 5. The contest is open to all. (The entry form includes a field for WEF Member ID number; this field is optional.) Find full submission details online at www.weftec.org/ingenuity.

Member Spotlight



Name: EMILY SEAY

Duration with VWEA: One month
Company/Profession: AECOM, Roadway/Hydraulics Engineer in Norfolk, Virginia
Years of Experience: 4.5 years
Hometown: Louisa, Virginia

What kind of projects do you work on?
Drainage design and hydraulic analysis, stormwater management design, roadway design, maintenance of traffic and sequence of construction plans, signing and pavement marking plans, etc.

Why did you choose to join VWEA?
The opportunity to learn from other water professionals and stay up to date in the water industry.

What is your favorite thing to do outside of the office?
I enjoy running, my dog, summers at the beach, and cheering on UVA sports.



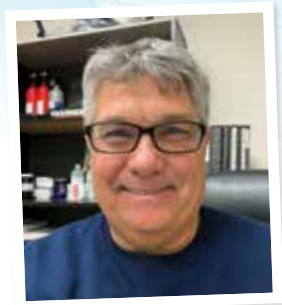
Name: MADELEINE BROUSE

Duration with VWEA: Approximately one month
Company/Profession: Hazen and Sawyer
Years of Experience: One year
Hometown: Bluemont, VA

What kind of projects do you work on?
I currently work on stormwater projects and water treatment plant and distribution system upgrade projects

Why did you choose to join VWEA?
I was interested in joining VWEA for the opportunities to network and meet other people in my field.

What is your favorite thing to do outside of the office?
My favorite activity outside of the office is painting.



Name: ENRIQUE MUNOZ

Duration with VWEA: Recently became a member
Company/Profession: Environmental Systems Service, Ltd. QA/QC/Safety Technician
Years of Experience: 6 years
Hometown: Fredericksburg, VA.

What kind of projects do you work on?
Quality Control and Assurance Audits for Waste Water Treatment Plants (mostly package plants and some municipal). Plants Hazards and Safety Assessments and Reporting

Why did you choose to join VWEA?
I joined VWEA to learn and share with other members and committees about my field of work

What is your favorite thing to do outside of the office?
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